

AGRICULTURAL LAND CLASSIFICATION  
AND STATEMENT OF PHYSICAL CHARACTERISTICS

MOOTLAW QUARRY, INGOE  
STAMFORDHAM, NORTHUMBERLAND

PROPOSED EXTENSION OF QUARRY

MAFF  
Leeds Regional Office

JANUARY 1992  
File Ref: 2FCS 5704  
Project No: 132/91

lds.AL5.Quary.ext

CONTENTS

1. INTRODUCTION AND SITE CHARACTERISTICS
2. AGRICULTURAL LAND CLASSIFICATION GRADES
3. STATEMENT OF PHYSICAL CHARACTERISTICS
4. SOIL PROFILE DESCRIPTIONS

MAP(S)

1. AGRICULTURAL LAND CLASSIFICATION
2. TOPSOIL MAP
3. SUBSOIL MAP

AGRICULTURAL LAND CLASSIFICATION REPORT,

1.0 Introduction and Site Characteristics

1.1 Location

National Grid Reference:-	NZ 024 752
Location Details:-	14 km north-east of Hexham town centre
Site Size:-	71 ha

1.2 Survey Methods

Date Surveyed:-	22nd January 1992
Boring Density and Spacing Basis:-	One boring per hectare at 100 m intervals at points predetermined by the National Grid
Sampling Method:-	By hand auger to a depth of 1.00 m
Number of Borings:-	71
Number of Soil Pits (used for):-	2 for soil descriptions and for laboratory analysis

All land quality assessments were made using the methods described in "Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988)".

This detailed survey supersedes the previous "1" to one mile" survey of the area.

1.3 Land Use:-	Mainly arable and ley grassland but with smaller areas of permanent and rough grazing and farm woodland
1.4 Climate and Relief	
Average Annual Rainfall (AAR):-	756 mm
Accumulated Temperature above 0°C (January-June):-	1111 day °C
Field Capacity Days:-	196 days
Moisture Deficit:	
wheat:-	67 mm
potatoes:-	45 mm
Altitude average:-	220 m a.o.d.
maximum:-	240 m a.o.d.
minimum:-	186 m a.o.d.
Climatic limitation (based on interaction of rainfall and temperature values):-	Subgrade 3b
Relief:-	Gently to very steeply sloping
Slopes (° ):-	2° - 20°
Gradient Limitations:-	
Limiting gradient(s):-	8° - 20°
Grade(s)/subgrade(s):-	3b, 4 and 5
Occurrence on site:-	Slopes of 8-11° limit parts of the south of the site to subgrade 3b. Slopes of 12° - 20° limit some northern areas to grades 4 and 5

## 1.5 Geology and Soil

### Solid Strata:-

Carboniferous Upper and Middle Limestone group consisting of interbedded sandstone and limestone

### Depth of solid rock from surface:-

Generally greater than 1.00 m but in places as little as 50 cm to 80 cm where profiles overlie sandstone

### Drift types:-

Boulder clay and alluvium

### Thickness of drift and distribution:-

Generally greater than 1.00 m but only 50 cm to 80 cm on the steeper slopes. Alluvium is restricted to flat lowlying land in the northern part of the site

### Soil Types and Distribution:-

Medium to heavy-textured soils cover most of the site. With light to medium-textured soils in three separate areas in the north and south

Soil Textures (topsoils and subsoils):-

Generally medium clay loam topsoils overlying heavy clay loam, clay or silty clay subsoils. Heavy clay loam topsoils occur in the north and light to medium-textured topsoils (medium sandy loam or sandy clay loam) overlie loamy sand or sand subsoils where sandstone is close to the surface

Soil Series/Associations:-

Brickfield III

On 1/250000 map:-

Association

Soil Limitations and type:-

Soil texture where heavy clay occurs close to the surface

#### 1.6 Drainage

Soil type and Wetness Class:-

The medium to heavy-textured soils are generally poorly drained, falling in Wetness Class III. The light-textured soils over sandstone are well-drained falling in Wetness Class I

Drainage Limitations:-

Slowly permeable subsoils on the heavy-textured land

## 2.0 Agricultural Land Classification Grades

The ALC grades occurring on the site are as follows:-

<u>Grade/Subgrade</u>	<u>Hectares</u>	<u>Percentage of</u>	<u>Percentage of Total</u>
		<u>Agricultural Area</u>	<u>Area</u>
1			
2			
3a			
3b	59.52	82.3	80.0
4	11.32	15.6	15.2
5	1.52	2.1	2.0
Non Agricultural	1.68		2.3
Agricultural Buildings			
Urban	0.33		0.5
Other	_____	_____	_____
Total	74.37	100	100
	_____	_____	_____

**Subgrade 3b**

**Distribution on site:-** This subgrade covers most of the site

**Soil Type(s) and Texture(s):-** Generally medium over heavy-textured soils with medium clay loam or medium silty clay loam topsoils overlying heavy clay loam. Silty clay or clay. In places light-textured subsoils (usually loamy medium sand) occur over sandstone

**Depth to Slowly Permeable Layers:-** 30-35 cm but only in the heavy-textured soils

**Wetness and Drainage Class:-** The medium to heavy- textured soils are poorly drained and fall in Wetness Class IV but where light-textured subsoils occur soils are well-drained and fall in Wetness Class I

**Stone Percentage and Type:-** Topsoils and subsoils are generally stoneless to slightly stony (0-10% small to medium sandstones and hardstones) but subsoils are stonier where they overlie sandstone

**Grade Limiting Factors:-** Climate and soil wetness



**Grade 4**

**Distribution on site:-**

In two separate areas in the north

**Soil Type(s) and Texture(s):-**

In the more northerly of the two areas of Grade 4 medium sandy loam topsoils overlie medium sandy loam or loamy medium sand subsoils. In the more southerly area soils are heavy-textured with heavy clay loam topsoils overlying clay or silty clay subsoils

**Depth to Slowly Permeable Layers:-**

Slowly permeable layers occur in the heavy-textured soils at depths of around 20 cm

**Wetness and Drainage Class:-**

Soils in the more northerly area are well-drained (Wetness Class I) while those in the southerly area are poorly-drained (Wetness Class IV)

**Stone Percentage and Type:-**

Soils are stoneless to very slightly stony with up to 5% hard stones or sandstones

**Grade Limiting Factors:-**

Gradients of 12° - 18° in the more northerly area at Couping Edge. Soil wetness in the southern area near Blackhope Hill

Grade 5

Distribution on site:- In two separate areas in the north

Soil Type(s) and Texture(s):-

At Couping Edge:- Medium over heavy textured soils

At Blackhope Hill:- Thin light soils over sandstone

Depth to Slowly Permeable

Layers:- At 15 cm depth but only in the heavy soils  
at Couping Edge

Wetness and Drainage Class:- Poorly-drained (Wetness Class IV) at Couping  
Edge. Freely drained (Wetness Class I) at  
Blackhope Hill

Grade Limiting Factors:- Gradients of 18° - 25°

Non Agricultural

Type and location of land included:-

A small area of scrubland in the south-west of the site and four small areas of farm woodland in the north

Urban

Type of land use included:-

A farm track in the south-east and a minor road cutting across the centre of the site

### 3.0 STATEMENT OF PHYSICAL CHARACTERISTICS (SOIL PROPERTIES AND RESOURCES)

#### 3.1 Soil Properties

Two soil types (including the alluvial variant) occur on the site. Their distribution along with soil depth and quantity information are shown on the accompanying maps.

<b>Soil Type 1:-</b>	Poorly drained medium over heavy boulder clay and alluvial soils
<b>Occurrence:-</b>	Most of the site - the alluvial variant covers the flat area north of Couping Edge
<b>Textures:-</b>	Generally medium clay loam topsoils overlying medium clay loam, heavy clay loam, clay or silty clay subsoils
<b>Stone content:-</b>	The soils are stoneless to slightly stony with up to 10% hardstones and sandstones in the topsoil and subsoil
<b>Horizon thicknesses:-</b>	Mean topsoil depth is 30 cm. Mean subsoil depth is 70 cm
<b>Profile pit features:-</b>	Moderately-developed medium sub-angular blocky topsoil overlying a moderately developed coarse angular blocky upper subsoil and a moderately developed coarse prismatic lower subsoil

**Soil Type 2:-** Light or medium textured soils over sandstone

**Occurrence:-** In two separate areas in the north and one in the south

**Textures:-** Medium sandy loam or medium clay loam topsoils overlying medium sandy loam or loamy medium sand subsoils passing to sandstone

**Stone content:-** These soils are stoneless to slightly stony but with sandstone bedrock occurring in places at depths of 60 - 80 cm

**Horizon thicknesses:-** Average topsoil depth is 25 cm. Subsoil depth is 45 cm

**Profile pit features:-** Moderately developed fine to medium sub-angular blocky structures in topsoil becoming angular blocky in the upper subsoil

### 3.2 Soil Resources

#### Topsoils

##### Unit T1

Texture/stone content:- Stoneless to slightly stony medium sandy loam

Structure:- Moderately developed medium sub-angular blocky

Occurrence:- In a band along Couping Edge

Thickness:- Mean:- 25 cm

##### Unit T2

Texture/stone content:- Stoneless medium clay loam

Structure:- Moderately developed medium sub-angular blocky

Occurrence:- Over most of the site

Thickness:- Mean:- 30 cm

## Subsoils

### Unit S1

- Texture stone content:-** Slightly stony medium sandy loam or loamy medium sand
- Structure:-** Weakly developed free sub-angular blocky or granular
- Occurrence:-** On the north western edge of the site, along Couping Edge and to the south west of Kearsley
- Thickness:-** 45 cm passing to sandstone bedrock at a mean depth of 70 cm

### Unit S2

- Texture stone content:-** Stoneless to slightly stony heavy clay loam, silty clay or clay (includes alluvial clay in the flat area north of Couping Edge)
- Structure:-** Moderately developed coarse angular blocky to prismatic structure
- Occurrence:-** Over most of the site
- Thickness:-** Mean thickness is 70 cm (sandstone occurs in places below 80 cm)

Resource Planning Group  
Leeds Regional Office  
February 1992

#### 4. SOIL PROFILE DESCRIPTIONS

Soil type 1:- Poorly drained medium over heavy boulder clay soil

Location: near boring 38  
Slope: 0°  
Weather: clear, cold, dry  
Land Use: rough grass

SOIL DEPTH (cm)	PROFILE DESCRIPTION
0-25	Very dark greyish brown (10 YR 3/2) medium clay loam; few faint dark reddish brown (5 YR 3/3) medium mottles; stoneless; moist; moderately developed medium sub-angular blocky structure; medium packing density; moderately porous with common fine pores and fissures; firm soil strength; moderately sticky; moderately plastic; many fine fibrous and few medium fleshy roots; non calcareous; abrupt irregular boundary
25-45	Mixed brownish yellow (7.5 YR 6/8) and grey (5 YR 6/1) heavy clay loam; very slightly stony with a few small and medium and rare large sub-angular sandstones; moderately developed coarse angular blocky structure; high packing density; slightly porous with few fine pores and fissures; very firm soil strength; moderately sticky; moderately plastic; many fine fibrous roots; non calcareous; gradual wavy boundary
45-100	Dark grey (5 Y 4/1) silty clay; many distinct medium yellowish brown (10 YR 5/6) and grey (N5) mottles; slightly stony with common small and medium sub-angular sandstones and a few large sub-angular sandstones; moist; moderately developed coarse prismatic structure; high packing density; slightly porous; few fine pores and fissures; very firm; very sticky; very plastic; common very fine fibrous roots; non calcareous



Soil type 1:- Medium over heavy boulder clay soil (shallow variant passing to sandstone at depth)

Location: near boring 50  
Slope: 3° SW  
Weather: clear, cold, dry  
Land Use: winter cereals

SOIL DEPTH (cm)  
0-30

PROFILE DESCRIPTION

dark brown (10 YR 3/3) medium clay loam; unmottled; very slightly stony (0-5% small and medium sub-angular sandstones); moist; moderately developed fine to medium sub-angular blocky structure; medium packing density; common fine pores and fissures; moderately firm soil strength; slightly sticky; slightly plastic; common fine fibrous roots; non calcareous; clear, smooth boundary

30-50

yellowish brown (10 YR 5/8) heavy clay loam; common faint yellowish brown (10 YR 5/6) mottles; very slightly stony (0-5% small sub-rounded sandstones); moist; moderately developed fine to medium sub-angular to angular blocky structure; medium packing density; few fine pores and fissures; firm soil strength; moderately sticky; very plastic; few fine fibrous roots; non calcareous; abrupt wavy boundary

50-80

brownish yellow (10 YR 6/8) medium sand; common fine faint yellowish brown mottles (10 YR 5/6); stoneless; moist; weakly developed granular structure; low packing density; loose soil strength; non-sticky; non plastic; no roots; non calcareous

80+

weathering medium-textured soft sandstone

MAP(S)